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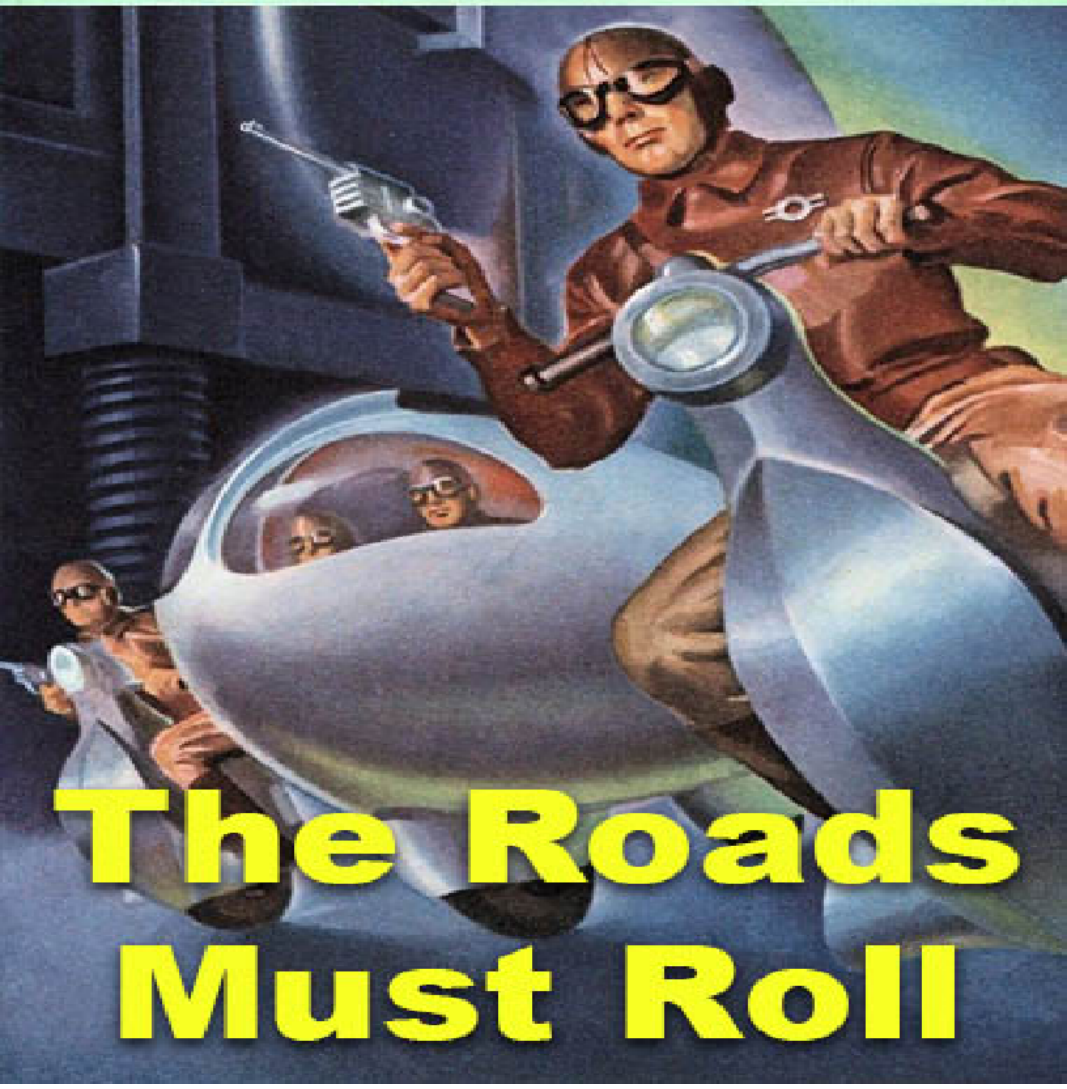

The Roads Must Roll

"Who makes the roads roll?"

The speaker stood still on the rostrum and waited for his audience to answer him. The reply came in scattered shouts that cut through the ominous, discontented murmur of the crowd.

"We do!" - "We do!" - "Damn right!"

"Who does the dirty work 'down inside' - so that Joe Public can ride at his ease?"

This time it was a single roar, "We do!"

The speaker pressed his advantage, his words tumbling out in a rasping torrent. He leaned toward the crowd, his eyes picking out individuals at whom to fling his words. "What makes business? The roads! How do they move the food they eat? The roads! How do they get to work? The roads! How do they get home to their wives? The roads!" He paused for effect, then lowered his voice. "Where would the public be if you boys didn't keep them roads rolling? Behind the eight ball and everybody knows it. But do they appreciate it? Pfui! Did we ask for too much? Were our demands unreasonable? 'The right to resign whenever we want to.' Every working stiff in other lines of work has that. 'The same pay as the engineers.' Why not? Who are the real engineers around here? D'yuh have to be a cadet in a funny little hat before you can learn to wipe a bearing, or jack down a rotor? Who earns his keep: The 'gentlemen' in the control offices, or the boys 'down inside'? What else do we ask? 'The right to elect our own engineers.' Why the hell not? Who's competent to pick engineers? The technicians? - or some damn, dumb examining board that's never been 'down inside', and couldn't tell a rotor bearing from a field coil?"

He changed his pace with natural art, and lowered his voice still further. "I tell you, brother, it's time we quit fiddlin' around with petitions to the Transport Commission, and use a little direct action. Let 'em yammer about democracy; that's a lot of eye wash - we've got the power, and we're the men that count!"

A man had risen in the back of the hall while the speaker was

haranguing. He spoke up as the speaker paused. "Brother Chairman," he drawled, "may I stick in a couple of words?"

"You are recognized, Brother Harvey."

"What I ask is: what's all the shootin' for? We've got the highest hourly rate of pay of any mechanical guild, full insurance and retirement, and safe working conditions, barring the chance of going deaf." He pushed his anti-noise helmet further back from his ears. He was still in dungarees, apparently just up from standing watch. "Of course we have to give ninety days notice to quit a job, but, cripes, we knew that when we signed up. The roads have got to roll - they can't stop every time some lazy punk gets bored with his billet.

"And now Soapy-" The crack of the gavel cut him short. "Pardon me, I mean Brother Soapy - tells us how powerful we are, and how we should go in for direct action. Rats! Sure we could tie up the roads, and play hell with the whole community-but so could any screwball with a can of nitroglycerine, and he wouldn't have to be a technician to do it, neither.

"We aren't the only frogs in the puddle. Our jobs are important, sure, but where would we be without the farmers - or the steel workers - or a dozen other trades and professions?"

He was interrupted by a sallow little man with protruding upper teeth, who said, "Just a minute, Brother Chairman, I'd like to ask Brother Harvey a question," then turned to Harvey and inquired in a sly voice, "Are you speaking for the guild, Brother - or just for yourself? Maybe you don't believe in the guild? You wouldn't by any chance be" - he stopped and slid his eyes up and down Harvey's lank frame - "a spotter, would you?"

Harvey looked over his questioner as if he had found something filthy in a plate of food. "Sikes," he told him, "if you weren't a runt, I'd stuff your store teeth down your throat. I helped found this guild. I was on strike in 'sixty-six. Where were you in 'sixty-six? With the finks?"

The chairman's gavel pounded. "There's been enough of this," he said. "Nobody who knows anything about the history of this guild doubts the loyalty of Brother Harvey. We'll continue with the regular order of business." He stopped to clear his throat. "Ordinarily we don't open our floor to outsiders, and some of you boys have expressed a distaste for some of the engineers we work under, but there is one

engineer we always like to listen to whenever he can get away from his pressing duties. I guess maybe it's because he's had dirt under his nails the same as us. Anyhow, I present at this time Mr. Shorty Van Kleeck-"

A shout from the floor stopped him. "Brother Van Kleeck!"

"O.K.-Brother Van Kleeck, Chief Deputy Engineer of this road-town."

"Thanks, Brother Chairman." The guest speaker came briskly forward, and grinned expansively at the crowd, seeming to swell under their approval. "Thanks, Brothers. I guess our chairman is right. I always feel more comfortable here in the Guild Hall of the Sacramento Sector - or any guild hail, for that matter - than I do in the engineers' dubhouse. Those young punk cadet engineers get in my hair. Maybe I should have gone to one of the fancy technical institutes, so I'd have the proper point of view, instead of coming up from 'down inside'.

"Now about those demands of yours that the Transport Commission just threw back in your face - Can I speak freely?"

"Sure you can, Shorty!" - "You can trust us!"

"Well, of course I shouldn't say anything, but I can't help but understand how you feel. The roads are the big show these days, and you are the men that make them roll. It's the natural order of things that your opinions should be listened to, and your desires met. One would think that even politicians would be bright enough to see that. Sometimes, lying awake at night, I wonder why we technicians don't just take things over, and-"

"Your wife is calling, Mr. Gaines."

"Very well." He picked up the handset and turned to the visor screen.

"Yes, darling, I know I promised, but ... You're perfectly right, darling, but Washington has especially requested that we show Mr. Blekinsop anything be wants to see. I didn't know he was arriving today.... No, I can't turn him over to a subordinate. It wouldn't be courteous. He's Minister of Transport for Australia. I told you that.... Yes, darling, I know that courtesy begins at home, but the roads must

roll. It's my job; you knew that when you married me. And this is part of my job. That's a good girl. We'll positively have breakfast together. Tell you what, order horses and a breakfast pack and we'll make it a picnic. I'll meet you in Bakersfield - usual place.... Goodbye, darling. Kiss Junior goodnight for me."

He replaced the handset on the desk whereupon the pretty, but indignant, features of his wife faded from the visor screen. A young woman came into his office. As she opened the door she exposed momentarily the words printed on its outer side; "DIEGO-RENO ROADTOWN, Office of the Chief Engineer." He gave her a harassed glance.

"Oh, it's you. Don't marry an engineer, Dolores, marry an artist. They have more home life."

"Yes, Mr. Gaines. Mr. Blekinsop is here, Mr. Gaines."

"Already? I didn't expect him so soon. The Antipodes ship must have grounded early."

"Yes, Mr. Gaines."

"Dolores, don't you ever have any emotions?"

"Yes, Mr. Gaines."

"Hmmm, it seems incredible, but you are never mistaken. Show Mr. Blekinsop in."

"Very good, Mr. Gaines."

Larry Gaines got up to greet his visitor. Not a particularly impressive little guy, he thought, as they shook hands and exchanged formal amenities. The rolled umbrella, the bowler hat were almost too good to be true.

An Oxford accent partially masked the underlying clipped, flat, nasal twang of the native Australian. "It's a pleasure to have you here, Mr. Blekinsop, and I hope we can make your stay enjoyable."

The little man smiled. "I'm sure it will be. This is my first visit to your wonderful country. I feel at home already. The eucalyptus trees, you know, and the brown hills-"

"But your trip is primarily business?"

"Yes, yes. My primary purpose is to study your roadcities, and report to my government on the advisability of trying to adapt your startling American methods to our social problems Down Under. I thought you understood that such was the reason I was sent to you."

"Yes, 1 did, in a general way. I don't know just what it is that you wish to find out. I suppose that you have heard about our road towns, how they came about, how they operate, and so forth."

"I've read a good bit, true, but I am not a technical man, Mr. Gaines, not an engineer. My field is social and political. I want to see how this remarkable technical change has affected your people. Suppose you tell me about the roads as if I were entirely ignorant. And I will ask questions."

"That seems a practical plan. By the way, how many are there in your party?"

"Just myself. I sent my secretary on to Washington."

"I see." Gaines glanced at his wrist watch. "It's nearly dinner time. Suppose we run up to the Stockton strip for dinner. There is a good Chinese restaurant up there that I'm partial to. It will take us about an hour and you can see the ways in operation while we ride."

"Excellent."

Gaines pressed a button on his desk, and a picture formed on a large visor screen mounted on the opposite wall. It showed a strong-boned, angular young man seated at a semi-circular control desk, which was backed by a complex instrument board. A cigarette was tucked in one corner of his mouth.

The young man glanced up, grinned, and waved from the screen. "Greetings and salutations, Chief. What can I do for you?"

"Hi, Dave. You've got the evening watch, eh? I'm running up to the Stockton sector for dinner. Where's Van Kleeck?"

"Gone to a meeting somewhere. He didn't say."

"Anything to report?"

"No, sir. The roads are rolling, and all the little people are going ridey-ridey home to their dinners."

"O.K.-keep 'em rolling."

"They'll roll, Chief."

Gaines snapped off the connection and turned to Blekinsop. "Van Kleeck is my chief deputy. I wish he'd spend more time on the road and less on politics. Davidson can handle things, however. Shall we go?"

They glided down an electric staircase, and debauched on the walkway which bordered the northbound five mile-an-hour strip. After skirting a stairway trunk marked OVERPASS TO SOUTHBOUND ROAD, they paused at the edge of the first strip. "Have you ever ridden a conveyor strip before?" Gaines inquired. "It's quite simple. Just remember to face against the motion of the strip as you get on."

They threaded their way through homeward-bound throngs, passing from strip to strip. Down the center of the twenty-mile-an-hour strip ran a glassite partition which reached nearly to the spreading roof. The Honorable Mister Blekinsop raised his eyebrows inquiringly as

he looked at it.

"Oh, that?" Gaines answered the unspoken inquiry as he slid back a panel door and ushered his guest through.

"That's a wind break. If we didn't have some way of separating the air currents over the strips of different speeds, the wind would tear our clothes off on the hundred-mile-an-hour strip." He bent his head to Blekinsop's as he spoke, in order to cut through the rush of air against the road surfaces, the noise of the crowd, and the muted roar of the driving mechanism concealed beneath the moving strips. The combination of noises inhibited further conversation as they proceeded toward the middle of the roadway. After passing through three more wind screens located at the forty, sixty, and eighty-mile-an-hour strips respectively, they finally reached the maximum speed strip, the hundred-mile-an-hour strip, which made the round trip, San Diego to Reno and back, in twelve hours.

Blekinsop found himself on a walkway twenty feet wide facing another partition. Immediately opposite him an illuminated show window proclaimed:

JAKE'S STEAK HOUSE No. 4

The Fastest Meal on the Fastest Road!

"To dine on the fly Makes the miles roll by!!"

"Amazing!" said Mr. Blekinsop. "It would be like dining in a tram. Is this really a proper restaurant?"

"One of the best. Not fancy, but sound."

"Oh, I say, could we-"

Gaines smiled at him. "You'd like to try it, wouldn't you, sir?"

"I don't wish to interfere with your plans-"

"Quite all right. I'm hungry myself, and Stockton is a long hour away. Let's go in."

Gaines greeted the manageress as an old friend. "Hello, Mrs. McCoy. How are you tonight?"

"If it isn't the chief himself! It's a long time since we've had the pleasure of seeing your face." She led them to a booth somewhat detached from the crowd of dining commuters. "And will you and your friend be having dinner?"

"Yes, Mrs. McCoy-suppose you order for us-but be sure it includes one of your steaks."

"Two inches thick-from a steer that died happy." She glided away, moving her fat frame with surprising grace.

With sophisticated foreknowledge of the chief engineer's needs, Mrs. McCoy had left a portable telephone at the table. Gaines plugged it in to an accommodation jack at the side of the booth, and dialed a number.

"Hello-Davidson? Dave, this is the chief. I'm in Jake's beanery number four for supper. You can reach me by calling ten-six-six."

He replaced the handset, and Blekinsop inquired politely: "Is it necessary for you to be available at all times?"

"Not strictly necessary," Gaines told him, "but I feel safer when I am in touch. Either Van Kleeck, or myself, should be where the senior

engineer of the watch - that's Davidson this shift - can get hold of us in a pinch. If it's a real emergency, I want to be there, naturally."

"What would constitute a real emergency?"

"Two things, principally. A power failure on the rotors would bring the road to a standstill, and possibly strand millions of people a hundred miles, or more, from their homes. If it happened during a rush hour we would have to evacuate those millions from the road-not too easy to do."

"You say millions-as many as that?"

"Yes, indeed. There are twelve million people dependent on this roadway, living and working in the buildings adjacent to it, or within five miles of each side."

The Age of Power blends into the Age of Transportation almost imperceptibly, but two events stand out as landmarks in the change: the achievement of cheap sun power and the installation of the first mechanized road.

The power resources of oil and coal of the United States had - save for a few sporadic outbreaks of common sense - been shamefully wasted in their development all through the first half of the twentieth century. Simultaneously, the automobile, from its humble start as a one-lunged horseless carriage, grew into a steel-bodied monster of over a hundred horsepower and capable of making more than a hundred miles an hour. They boiled over the countryside, like yeast in ferment. In 1955 it was estimated that there was a motor vehicle for every two persons in the United States.

They contained the seeds of their own destruction. Eighty million steel juggernauts, operated by imperfect human beings at high speeds, are more destructive than war. In the same reference year the premiums paid for compulsory liability and property damage insurance by automobile owners exceeded in amount the sum paid that year to purchase automobiles. Safe driving campaigns were chronic phenomena, but were mere pious attempts to put Humpty-Dumpty together again. It was not physically possible to drive safely in those crowded metropolises. Pedestrians were sardonically divided into two classes, the quick, and the dead.

But a pedestrian could be defined as a man who had found a place

to park his car. The automobile made possible huge cities, then choked those same cities to death with their numbers. In 1900 Herbert George Wells pointed out that the saturation point in the size of a city might be mathematically predicted in terms of its transportation facilities. From a standpoint of speed alone the automobile made possible cities two hundred miles in diameter, but traffic congestion, and the inescapable, inherent danger of high-powered, individually operated vehicles cancelled out the possibility.

In 1955 Federal Highway #66 from Los Angeles to Chicago, "The Main Street of America", was transformed into a superhighway for motor vehicles, with an underspeed limit of sixty miles per hour. It was planned as a public works project to stimulate heavy industry; it had an unexpected by-product. The great cities of Chicago and St. Louis stretched out urban pseudopods toward each other, until they met near Bloomington, Illinois. The two parent cities actually shrunk in population.

That same year the city of San Francisco replaced its

antiquated cable cars with moving stairways, powered

with the Douglas-Martin Solar Reception Screens. The

largest number of automobile licenses in history had been

issued that calendar year, but the end of the automobile era was in sight, and the National Defense Act of 1957 gave fair warning.

This act, one of the most bitterly debated ever to be brought out of committee, declared petroleum to be an essential and limited material of war. The armed forces had first call on all oil, above or below the ground, and eighty million civilian vehicles faced short and expensive rations. The "temporary" conditions during World War II had become permanent.

Take the superhighways of the period, urban throughout their length. Add the mechanized streets of San Francisco's hills. Heat to boiling point with an imminent shortage of gasoline. Flavor with Yankee ingenuity. The first mechanized road was opened in 1960 between Cincinnati and Cleveland.

It was, as one would expect, comparatively primitive in

design, being based on the ore belt conveyors of ten years earlier. The fastest strip moved only thirty miles per hour and was quite narrow,

for no one had thought of the possibility of locating retail trade on the strips themselves. Nevertheless, it was a prototype of social pattern which was to dominate the American scene within the next two decades-neither rural, nor urban, but partaking equally of both, and based on rapid, safe, cheap, convenient transportation.

Factories - wide, low buildings whose roofs were covered with solar power screens of the same type that drove the road-lined the roadway on each side. Back of them and interspersed among them were commercial hotels, retail stores, theatres, apartment houses. Beyond this long, thin, narrow strip was the open country-side, where the bulk of the population lived. Their homes dotted the hills, hung on the banks of creeks, and nestled between the farms. They worked in the "city" but lived in the "country" - and the two were not ten minutes apart.

Mrs. McCoy served the chief and his guest in person. They checked their conversation at the sight of the magnificent steaks.

Up and down the six hundred mile line, Sector Engineers of the Watch were getting in their hourly reports from their subsector technicians. "Subsector one-check!" "Subsector two-check!" Tensionometer readings, voltage, load, bearing temperatures, synchrotachometer readings-"Subsector seven-check!" Hard-bitten, able men in dungarees, who lived much of their lives 'down inside' amidst the unmuted roar of the hundred mile strip, the shrill whine of driving rotors, and the complaint of the relay rollers.

Davidson studied the moving model of the road, spread out before him in the main control room at Fresno Sector. He watched the barely perceptible crawl of the miniature hundred mile strip and subconsciously noted the reference number on it which located Jake's Steak House No. 4. The chief would be getting in to Stockton soon; he'd give him a ring after the hourly reports were in. Everything was quiet; traffic tonnage normal for rush hour; he would be sleepy before this watch was over. He turned to his Cadet Engineer of the Watch. "Mr. Barnes."

"Yes, sir."

"I think we could use some coffee."

"Good idea, sir. I'll order some as soon as the hourlies are in."

The minute hand of the control board chronometer reached twelve. The cadet watch officer threw a switch. "All sectors, report!" he said, in crisp, self-conscious tones.

The faces of two men flicked into view on the visor Screen. The younger answered him with the same air of acting under supervision.

"Diego Circle - rolling!"

They were at once replaced by two more. Angeles Sector - rolling!"

Then: "Bakersfield Sector - rolling!"

And: "Fresno Sector - rolling!".

Finally, when Reno Circle had reported, the cadet turned to Davidson and reported: "Rolling, sir."

"Very well-keep them rolling!"

The visor screen flashed on once more. "Sacramento Sector, supplementary report."

"Proceed."

"Cadet Guenther, while on visual inspection as cadet sector engineer of the watch, found Cadet Alec Jeans, on watch as cadet subsector technician, and R. J. Ross, technician second class, on watch as technician for the same subsector, engaged in playing cards. It was not possible to tell with any accuracy how long they had neglected to patrol their subsector."

"Any damage?"

"One rotor running hot, but still synchronized. It was jacked down, and replaced."

"Very well. Have the paymaster give Ross his time, and turn him over to the civil authorities. Place Cadet Jeans under arrest and order him to report to me."

"Very well, sir."

"Keep them rolling!"

Davidson turned back to the control desk and dialed Chief Engineer Gaines' temporary number.

"You mentioned that there were two things that could cause major trouble on the road, Mr. Gaines, but you spoke only of power failure to the rotors."

Gaines pursued an elusive bit of salad before answering. "There really isn't a second major trouble-it won't happen. However - we are travelling along here at one hundred miles per hour. Can you visualize what would happen if this strip under us should break?"

Mr. Blekinsop shifted nervously in his chair. "Hmm - rather a disconcerting idea, don't you think? I mean to say, one is hardly aware that one is travelling at high speed, here in this snug room. What would the result be?"

"Don't let it worry you; the strip can't part. It is built

up of overlapping sections in such a fashion that it has a safety factor of better than twelve to one. Several miles of rotors would have to shut down all at once, and the circuit breakers for the rest of the line fail to trip out before there could possibly be sufficient tension on the strip to cause it to part.

"But it happened once, on the Philadelphia-Jersey City Road, and we aren't likely to forget it. It was one of the earliest high speed roads, carrying a tremendous passenger traffic, as well as heavy freight, since it serviced a heavily industrialized area. The strip was hardly more than a conveyor belt, and no one had foreseen the weight it would carry. It happened under maximum load, naturally, when the high speed way was crowded. The part of the strip behind the break buckled for miles, crushing passengers against the roof at eighty miles per hour. The section forward of the break cracked like a whip, spilling passengers onto the slower ways, dropping them on the exposed rollers and rotors down inside, and snapping them up against the roof.

"Over three thousand people were killed in that one accident, and there was much agitation to abolish the roads. They were even shut down for a week by presidential order, but he was forced to reopen them again. There was no alternative."

"Really? Why not?"

"The country bad become economically dependent on the roads. They were the principal means of transportation in the industrial

areas-the only means of economic importance. Factories were shut down; food didn't move; people got hungry-and the President was forced to let them roll again. It was the only thing that could be done; the social pattern had crystallized in one form, and it couldn't be changed overnight. A large, industrialized population must have large-scale transportation, not only for people, but for trade."

Mr. Blekinsop fussed with his napkin, and rather diffidently suggested, "Mr., Gaines, I do not intend to disparage the ingenious accomplishments of your great people, but isn't it possible that you may have put too many eggs in one basket in allowing your whole economy to become dependent on the functioning of one type of machinery?"

Gaines considered this soberly. "I see your point. Yes-and no. Every civilization above the peasant and village type is dependent on some key type of machinery. The old South was based on the cotton gin. Imperial England was made possible by the steam engine. Large populations have to have machines for power, for transportation, and for manufacturing in order to live. Had it not been for machinery the large populations could never have grown up. That's not a fault of the machine; that's its virtue.

"But it is true that whenever we develop machinery to the point where it will support large populations at a high standard of living we are then bound to keep that machinery running, or suffer the consequences. But the real hazard in that is not the machinery, but the men who run the machinery. These roads, as machines, are all right. They are strong and safe and will do everything they were designed to do. No, it's not the machines, it's the men.

"When a population is dependent on a machine, they are hostages of the men who tend the machines. If their morale is high, their sense of duty strong-"

Someone up near the front of the restaurant had turned up the volume control of the radio, letting out a blast of music that drowned out Gaines' words. When the sound had been tapered down to a more nearly bearable volume, he was saying:

"Listen to that. It illustrates my point."

Blekinsop turned an ear to the music. It was a swinging march of compelling rhythm, with a modern interpretive arrangement. One could hear the roar of machinery, the repetitive clatter of mechanisms.

A pleased smile of recognition spread over the Australian's face. "It's your Field Artillery Song, The Roll of the Caissons, isn't-it? But I don't see the connection."

"You're right; it was the Roll of the Caissons, but we

adapted it to our own purposes. It's the Road Song of the Transport Cadets. Wait."

The persistent throb of the march continued, and seemed to blend with the vibration of the roadway underneath into a single tympani. Then a male chorus took up the verse:

"Hear them hum!

Watch them run!

Oh, our job is never done,

For our roadways go rolling along!

While you ride;

While you glide;

We are watching 'down inside',

So your roadways keep rolling along!

"Oh, it's Hie! Hie! Hee!

The rotor men are we-

Check off the sectors loud and strong!

(spoken) One! Two! Three!

Anywhere you go

You are bound to know

That your roadways are rolling along!

(Shouted) KEEP THEM ROLLING!

That your roadways are rolling along!"

"See said Gaines, with more animation in his voice, "See? That is the real purpose of the United States Academy of Transport. That is the reason why the transport engineers are a semi-military profession, with strict discipline. We are the bottle neck, the sine qua non, of all industry, all economic life. Other industries can go on strike, and only create temporary and partial dislocations. Crops can fail here and there, and the country takes up the slack. But if the roads stop rolling, everything else must stop; the effect would be the same as a general strike-with this important difference: It takes a majority of the population, fired by a real feeling of grievance, to

create a general strike; but the men that run the roads, few as they are, can create the same complete paralysis.

"We had just one strike on the roads, back in 'sixty-six. It was justified, I think, and it corrected a lot of real, abuses-but it mustn't happen again."

"But what is to prevent it happening again, Mr. Gaines?"

"Morale-esprit de corps. The technicians in the road service are indoctrinated constantly with the idea that their job is a sacred trust. Besides which we do everything we can to build up their social position. But even more important is the Academy. We try to turn out graduate engineers imbued with the same loyalty, the same iron self-discipline, and determination to perform their duty to the community at any cost, that Annapolis and West Point and Goddard are so successful in inculcating in their graduates."

"Goddard? Oh, yes, the rocket field. And have you been successful, do you think?"

"Not entirely, perhaps, but we will be. It takes time to build up a tradition. When the oldest engineer is a man who entered the Academy in his teens, we can afford to relax a little and treat it as a solved problem."

"I suppose you are a graduate?"

Gaines grinned. "You flatter me-I must look younger than I am. No, I'm a carry-over from the army. You see, the Department of Defense operated the roads for some three months during

reorganization after the strike in 'sixty-six. I served on the conciliation board that awarded pay increases and adjusted working conditions, then I was assigned-"

The signal light of the portable telephone glowed red. Gaines said, "Excuse me," and picked up the handset.'

"Yes?"

Blekinsop could overhear the voice at the other end. "This is Davidson, Chief. The roads are rolling."

"Very well. Keep them rolling!"

"Had another trouble report from the Sacramento Sector."

"Again? What this time?"

Before Davidson could reply he was cut off. As Gaines reached out to dial him back, his coffee cup, half full, landed in his lap. Blekinsop was aware, even as he was rocked against the edge of the table, of a disquieting change in the hum of the roadway.

"What has happened, Mr. Gaines?"

"Don't know. Emergency stop-God knows why." He was dialing furiously. Shortly he flung the phone down, without bothering to return the handset to its cradle. "Phones are out. Come on! No- You'll be safe here. Wait."

"Must I?"

"Well, come along then, and stick close to me." He turned away, having dismissed the Australian cabinet minister from his mind. The strip ground slowly to a stop, the giant rotors and myriad rollers acting as fly wheels in preventing a disastrous sudden stop. Already a little knot of commuters, disturbed at their evening meal, were attempting to crowd out the door of the restaurant.

"Halt!"

There is something about a command issued by one who is used to being obeyed which enforces compliance. It may be intonation, or possibly a more esoteric power, such as animal tamers are reputed to be able to exercise in controlling ferocious beasts. But it does exist, and can be used to compel even those not habituated to obedience.

The commuters stopped in their tracks.

Gaines continued, "Remain in the restaurant until we are ready to evacuate you. I am the Chief Engineer. You will be in no danger here. You!" He pointed to a big fellow near the door. "You're deputized. Don't let anyone leave without proper authority. Mrs. McCoy, resume serving dinner."

Gaines strode out the door, Blekinsop tagging along. The situation outside permitted no such simple measures.

The hundred mile strip alone had stopped; a few feet away the next strip flew by at an unchecked ninety-five miles an hour. The passengers on it flickered past, unreal cardboard figures.

The twenty-foot walkway of the maximum speed strip had been crowded when the breakdown occurred. Now the customers of shops, of lunchstands, and of other places of business, the occupants of lounges, of television theatres-all came crowding out onto the walkway to see what had happened. The first disaster struck almost immediately.

The crowd surged, and pushed against a middle-aged woman on its outer edge. In attempting to recover her balance she put one foot over the edge of the flashing ninety-five mile strip. She realized her gruesome error, for she screamed before her foot touched the ribbon.

She spun around, and landed heavily on the moving strip, and was rolled by it, as the strip attempted to impart to her mass, at one blow, a velocity of ninety-five miles per hour-one hundred and thirty-nine feet per second: As she rolled she mowed down some of the cardboard figures as a sickle strikes a stand of grass. Quickly, she was out of sight, her identity, her injuries, and her fate undetermined, and already remote.

But the consequences of her mishap were not done with. One of the flickering cardboard figures bowled over by her relative momentum fell toward the hundred mile strip, slammed into the shockbound crowd, and suddenly appeared as a live man-but broken and bleeding, amidst the luckless, fallen victims whose bodies had checked his wild flight.

Even there it did not end. The disaster spread from its source, each hapless human ninepin more likely than not to knock down others so

that they fell over the danger-laden boundary, and in turn ricocheted to a dearly bought equilibrium.

But the focus of calamity sped out of sight, and Blekinsop could see no more. His active mind, accustomed to dealing with large' numbers of individual human beings, multiplied the tragic sequence he had witnessed by twelve hundred miles of thronged conveyor strip, and his stomach chilled.

To Blekinsop's surprise, Gaines made no effort to succor the fallen, nor to quell the fear-infected mob, but turned an expressionless face back to the restaurant. When Blekinsop saw that he was actually re-entering the restaurant, he plucked at his sleeve. "Aren't we going to help those poor people?"

The cold planes of the face of the man who answered him bore no resemblance to his genial, rather boyish, host of a few minutes before. "No. Bystanders can help them - I've got the whole road to think of. Don't bother me."

Crushed, and somewhat indignant, the politician did as he was ordered. Rationally, he knew that the Chief Engineer was right-a man responsible for the safety of millions cannot turn aside from his duty to render personal service to one-but the cold detachment of such viewpoint was repugnant to him.

Gaines was back in the restaurant "Mrs. McCoy, where is your get-away?"

"In the pantry, sir."

Gaines hurried there, Blekinsop at his heels. A nervous Filipino salad boy shrank out of his way as he casually swept a supply of prepared green stuffs onto the floor and stepped up on the counter where they had rested. Directly above his head and within reach was a circular manhole, counterweighted and operated by a handwheel set in its center. A short steel ladder, hinged to the edge of the opening was swung up flat to ceiling and secured by a hook.

Blekinsop lost his hat in his endeavor to clamber quickly enough up the ladder after Gaines. When he emerged on the roof of the building. Gaines was searching the ceiling of the roadway with a pocket flashlight He was shuffling along, stooped double in the awkward four feet of space between the roof underfoot and ceiling.

He found what he sought, some fifty feet away-another manhole

similar to the one they had used to escape

from below. He spun the wheel of the lock and stood up in the space, then rested his hands on the sides of the opening and with a single. lithe movement vaulted to the roof of the roadways. His companion followed him with more difficulty.

They stood in darkness, a fine, cold rain feeling at their faces. But underfoot, and stretching beyond sight on each hand, the sun power screens glowed with a faint opalescent radiance, their slight percentage of inefficiency as transformers of radiant sun power to available electrical power being evidenced as a mild phosphorescence. The effect was not illumination, but rather like the ghostly sheen of a snow covered plain seen by starlight.

The glow picked out the path they must follow to reach the rain-obscured wall of buildings bordering the ways. The path was a narrow black stripe which arched away into the darkness over the low curve of the roof. They started away on this path at a dog trot, making as much speed as the slippery footing and the dark permitted, while Blekinsop's mind still fretted at the problem of Gaines' apparently callous detachment. Although possessed of a keen intelligence his nature was dominated by a warm, human sympathy, without which no politician, irrespective of other virtues or shortcomings, is long successful.

Because of this trait he distrusted instinctively any mind which was guided by logic alone. He was aware that, from a standpoint of strict logic, no reasonable case could be made out for the continued existence of the human race, still less for the human values he served.

Had he been able to pierce the preoccupation of his companion, he would have been reassured. On the surface Gaines' exceptionally intelligent mind was clicking along with the facile ease of an electronic integrator-arranging data at hand, making tentative decisions, postponing judgments without prejudice until necessary data were available, exploring alternatives. Underneath, in a compartment insulated by stern self-discipline from the acting theatre of his mind, his emotions were a torturing storm

of self-reproach. He was heartsick at suffering he had seen, and which he knew too well was duplicated up and down the line. Although he was not aware of any personal omission, nevertheless, the fault was somehow his, for authority creates responsibility.

He had carried too long the superhuman burden of kingship - which no sane mind can carry light-heartedly - and was at this moment perilously close to the frame of mind which sends captains down with their ships. Only the need for immediate, constructive action sustained him.

But no trace of this conflict reached his features.

At the wall of buildings glowed a green line of arrows, pointing to the left. Over them, at the terminus of the narrow path, shone a sign: "ACCESS DOWN." They pursued this, Blekinsop puffing in Gaines' wake, to a door let in the wall, which gave in to a narrow stairway lighted by a single glowtube. Gaines plunged down this, still followed, and they emerged on the crowded, noisy, stationary walkway adjoining the northbound road.

Immediately adjacent to the stairway, on the right, was a public tele-booth. Through the glassite door they could see a portly, well-dressed man speaking earnestly to his female equivalent, mirrored in the visor screen. Three other citizens were waiting outside the booth.

Gaines pushed past them, flung open the door, grasped the bewildered and indignant man by the shoulders, and hustled him outside, kicking the door closed after him. He cleared the visor screen with one sweep of his hand, before the matron pictured therein could protest, and pressed the emergency-priority button.

He dialed his private code number, and was shortly looking into the troubled face of his Engineer of the Watch, Davidson.

"Report!"

"It's you, Chief! Thank God! Where are you?" Davidson's' relief was pathetic.

"Report!"

The Senior Watch Officer repressed his emotion and complied in direct, clipped phrases, "At seven-oh-nine p.m. the consolidated tension reading, strip twenty, Sacramento Sector, climbed suddenly. Before action could be taken, tension on strip twenty passed emergency level; the interlocks acted, and power to subject strip cut out. Cause of failure, unknown. Direct communication to Sacramento control office has failed. They do not answer the auxiliary, nor the commercial line. Effort to re-establish communication continues. Messenger dispatched from Stockton Subsector Ten.

"No casualties reported. Warning broadcast by public announcement circuit to keep clear of strip nineteen.

Evacuation has commenced."

"There are casualties," Gaines cut in. "Police and hospital emergency routine. Move!"

"Yes, sir!" Davidson snapped back, and hooked a thumb over his shoulder-but his Cadet Officer of the Watch had already jumped to comply. "Shall I cut out the rest of the road, Chief?"

"No. No more casualties are likely after the first disorder. Keep up the broadcast warnings. Keep, those other strips rolling, or we will have a traffic jam the devil himself couldn't untangle." - Gaines had in mind the impossibility of bringing the strips up to speed under load. The rotors were not powerful enough to do this. If the entire road was stopped, he would have to evacuate every strip, correct the trouble on strip twenty, bring all strips up to speed, and then move the accumulated peak load traffic. In the meantime, over five million stranded passengers would, constitute a tremendous police problem. It was simpler to evacuate passengers on strip twenty over the roof, and allow them to return home via the remaining strips. "Notify the Mayor and the Governor that I have assumed emergency authority. Same to the Chief of Police and place him under your orders. Tell the Commandant to arm all cadets available and await orders. Move!"

"Yes, sir. Shall I recall technicians off watch?"

"No. This isn't an engineering failure. Take a look at your readings; that entire sector went out simultaneously. Somebody cut out those rotors by hand. Place offwatch technicians on standby status-but don't arm them, and don't send them down inside. Tell the Commandant to rush all available senior-class cadets to Stockton Subsector Office number ten to report in. I want them equipped with tumblebugs, pistols, and sleepy bombs."

"Yes, sir." A clerk leaned over Davidson's shoulder and said something in his ear. "The Governor wants to talk to you, Chief."

"Can't do it-nor can you. Who's your relief? Have you sent for him?"

"Hubbard-he's just come in."

"Have him talk to the Governor, the Mayor, the press - anybody

that calls - even the White House. You stick to your watch. I'm cutting off. I'll be back in communication as quickly as I can locate a reconnaissance car." He was out of the booth almost before the screen cleared.

Blekinsop did not venture to speak, but followed him out to the northbound twenty-mile strip. There Gaines stopped, short of the wind break, turned, and kept his eyes on the wall beyond the stationary walkway. He picked out some landmark, or sign - not apparent to his companion - and did an Eliza-crossing-the-ice back to the walkway, so rapidly that Blekinsop was carried some hundred feet beyond him, and almost failed to follow when Gaines ducked into a doorway and ran down a flight of stairs.

They came out on a narrow lower walkway, 'down inside'. The pervading din claimed them, beat upon their bodies as well as their ears. Dimly, Blekinsop perceived their surroundings, as he struggled to face that wall of sound. Facing him, illuminated by the yellow monochrome of a sodium arc, was one of the rotors that drove the five-mile strip, its great, drum-shaped armature revolving slowly around the stationary field coils in its core. The upper surface of the drum pressed against the under side of the moving way and imparted to it its stately progress.

To the left and right, a hundred yards each way, and

beyond at similar intervals, farther than he could see, were other rotors. Bridging the gaps between the rotors were the slender rollers, crowded together like cigars in a

box, in order that the strip might have a continuous rolling support. The rollers were supported by steel girder arches through the gaps of which he saw row after row of rotors in staggered succession, the rotors in each succeeding row turning over more rapidly than the last.

Separated from the narrow walkway by a line of supporting steel pillars, and lying parallel to it on the side away from the rotors, ran a shallow paved causeway, joined to the walk at this point by a ramp. Gaines peered up and down this tunnel in evident annoyance. Blekinsop started to ask him what troubled him, but found his voice snuffed out by the sound: He could not cut through the roar of thousands of rotors and the whine of hundreds of thousands of rollers.

Gaines saw his lips move and guessed at the question.'

He cupped his hands around Blekinsop's right ear, and shouted, "No

car - I expected to find a car here."

The Australian, wishing to be helpful, grasped Gaines' arm and pointed back into the jungle of machinery.

Gaines' eye followed the direction indicated and picked out something that he had missed in his preoccupation - a half dozen men working around a rotor several strips away. They had jacked down a rotor until it was no longer in contact with the road surface and were preparing to replace it in toto. The replacement rotor was standing by on a low, heavy truck.

The Chief Engineer gave a quick smile of acknowledgment and thanks and aimed his flashlight at the group, the beam focused down to a slender, intense needle of light.

One of the technicians looked up, and Gaines snapped the light on and off in a repeated, irregular pattern. A figure detached itself from the group, and ran toward them.

It was a slender young man, dressed in dungarees and topped off with earpads and an incongruous, pillbox cap, bright with gold braid and Insignia. He recognized the Chief Engineer and saluted, his face falling into humorless, boyish intentness.

Gaines stuffed his torch into a pocket and commenced to gesticulate rapidly with both hands-clear, clean gestures, as involved and as meaningful as deaf-mute language. Blekinsop dug into his own dilettante knowledge of anthropology and decided that it was most like American Indian sign language, with some of the finger movements of hula. But it was necessarily almost entirely strange, being adapted for a particular terminology.

The cadet answered him in kind, stepped to the edge of the causeway, and flashed his torch to the south. He picked out a car, still some distance away, but approaching at headlong speed. It braked, and came to a stop alongside them.

It was a small affair, ovoid in shape, and poised on two centerline wheels. The forward, upper surface swung up and disclosed the driver, another cadet. Gaines addressed him briefly in sign language, then hustled Blekinsop ahead of him into the cramped passenger compartment.

As the glassite hood was being swung back into place, a blast of wind smote them, and the Australian looked up in time to glimpse the

last of three much larger vehicles hurtle past them. They were headed north, at a speed of not less than two hundred miles per hour. Blekinsop thought that he had made out the little hats of cadets through the windows of the last of the three, but he could not be sure.

He had no time to wonder - so violent was the driver's getaway. Gaines ignored the accelerating surge; he was already calling Davidson on the built-in communicator. Comparative silence had settled down once the car was closed. The face of a female operator at the relay station showed on the screen.

"Get me Davidson-Senior Watch Office!"

"Oh! It's Mr. Gaines! The Mayor wants to talk to you, Mr. Gaines."

"Refer him-and get me Davidson. Move!"

"Yes, sir!"

"And see here-leave this circuit hooked in to Davidson's board until I tell you personally to cut it."

"Right." Her face gave way to the Watch Officer's.

"That you, Chief? We're moving-progress O.K.-no change."

"Very well You'll be able to raise me on this circuit, or at Subsector Ten office. Clearing now." Davidson's face gave way to the relay operator.

"Your wife is calling, Mr. Gaines. Will you take it?"

Gaines muttered something not quite gallant, and answered, "Yes."

Mrs. Gaines flashed into facsimile. He burst into speech before she could open her mouth. "Darling I'm all right don't worry I'll be home when I get there I've go to go now." It was all out in one breath, and he slapped the control that cleared the screen.

They slammed to a breath-taking stop alongside the stair leading to the watch office of Subsector Ten, and piled out. Three big lorries were drawn up on the ramp, and three platoons of cadets were ranged in restless ranks alongside them.

A cadet trotted up to Gaines, and saluted. "Lindsay, sir-Cadet Engineer of the Watch. The Engineer of the Watch requests that you come at once to the control room."

The Engineer of the Watch looked up as they came in. "Chief-Van Kleeck is calling you."

"Put him on."

When Van Kleeck appeared in the big visor, Gaines greeted him with, "Hello, Van. Where are you?"

"Sacramento Office. Now, listen-"

"Sacramento? That's good! Report."

Van Kleeck looked disgruntled. "Report, hell! I'm not your deputy any more, Gaines. Now, you-"

"What the hell are you talking about?"

"Listen, and don't interrupt me, and you'll find out. You're through, Gaines. I've been picked as Director of the Provisional Central Committee for the New Order."

"Van, have you gone off your rocker? What do you mean-the New Order?"

"You'll find out. This is it-the functionalist revolution. We're in; you're out. We stopped strip twenty just to give you a little taste of what we can do."

Concerning Function: A Treatise on the Natural Order

in Society, the bible of the functionalist movement, was first published in 1930. It claimed to be a scientifically accurate theory of social relations. The author, Paul Decker, disclaimed the "outworn and futile" ideas of democracy and human equality, and substituted a system in which human beings were evaluated "functionally" - that is to say, by the role each filled in the economic sequence. The underlying thesis was that it was right and proper for a man to exercise over his fellows whatever power was inherent in his function, and that any other form of social organization was silly, visionary, and contrary to the "natural order."

The complete interdependence of modern economic life seems to have escaped him entirely.

His ideas were dressed up with a glib mechanistic

psendopsychology based on the observed orders of precedence among barnyard fowls, and on the famous Pavlov conditioned-reflex experiments on dogs. He failed to note that human beings are neither dogs, nor chickens. Old Doctor Pavlov ignored him entirely, as he had ignored so many others who had, blindly and unscientifically dogmatized about the meaning of his important, but strictly limited, experiments.

Functionalism did not take hold at once-during the thirties almost everyone, from truckdriver to hatcheck girl, had a scheme for setting the world right in six easy lessons; and a surprising percentage managed to get their schemes published. But it gradually spread. Functionalism was particularly popular among little people everywhere who could persuade themselves that their particular jobs were the indispensable ones, and that, therefore, under the "natural order" they would be top dog. With so many different functions actually indispensable such self-persuasion was easy.

Gaines stared at Van Kleeck for a moment before replying. "Van," he said slowly, "you don't really think you can get away with this, do you?"

The little man puffed out his chest. "Why not? We have gotten away with it. You can't start strip twenty until I am ready to let you, and I can stop the whole road, if necessary."

Gaines was becoming uncomfortably aware that he was dealing with unreasonable conceit, and held himself patiently in check. "Sure you can, Van-but how about the rest of the country? Do you think the United States Army will sit quietly by and let you run California as your private kingdom?"

Van Kleeck looked sly. "I've planned for that. I've just finished broadcasting a manifesto to all the road technicians in the country, telling them what we have done, and telling them to arise, and claim their rights. With every road in the country stopped, and people getting hungry, I reckon the President will think twice before sending the army to tangle with us. Oh, he could send a force to capture, or kill me - I'm not afraid to die! - but he doesn't dare start shooting down road technicians as a class, because the country can't get along without us - consequently, he'll have to get along with us - on our terms!"

There was much bitter truth in what he said. If an uprising of the road technicians became general, the government could no more

attempt to settle it by force than a man could afford to cure a headache by blowing out his brains. But was the uprising general?

"Why do you think that the technicians in the rest of the country will follow your lead?"

"Why not? It's the natural order of things. This is an age of machinery; the real power everywhere is in the technicians, but they have been kidded into not using their power with a lot of obsolete catch-phrases. And of all the classes of technicians, the most important, the absolutely essential, are the road technicians. From now on they run the show - it's the natural order of things!" He turned away for a moment, and fussed with some papers on the desk before him, then be added, "That's all for now, Gaines - I've got to call the White House, and let the President know how things stand. You carry on, and behave yourself, and you won't get hurt."

Gaines sat quite still for some minutes after the screen cleared. So that's how it was. He wondered what effect, if any, Van Kleeck's invitation to strike had had on road technicians elsewhere. None, he thought - but then he had not dreamed that it could happen among his own technicians. Perhaps he had made a mistake in refusing. to take time to talk to anyone outside the road. No - if he had stopped to talk to the Governor, or the newspapermen, he would still be talking. Still - He dialed Davidson.

"Any trouble in any other sectors, Dave?"

"No, Chief."

"Or on any other road?"

"None reported."

"Did you hear my talk with Van Kleeck?"

"I was cut in-yes."

"Good. Have Hubbard call the President and the Governor, and tell them that I am strongly opposed to the use of military force as long as the outbreak is limited to this road. Tell them that I will not be responsible if they move in before I ask for help."

Davidson looked dubious. "Do you think that is wise, Chief?"

"I do! If we try to blast Van and his red-hots out of their position,

we may set off a real, country-wide uprising. Furthermore, he could wreck the road so that God himself couldn't put it back together. What's your rolling tonnage now?"

"Fifty-three percent under evening peak."

"How about strip twenty?"

"Almost evacuated."

"Good. Get the road clear of all traffic as fast as possible. Better have the Chief of Police place a guard on all entrances to the road to keep out new traffic. Van may stop all strips at any time - or I may need to, myself. Here is my plan: I'm going 'down inside' with these armed cadets. We will work north, overcoming any resistance we meet. You arrange for watch technicians and maintenance crews to follow immediately behind us. Each rotor, as they come to it, is to be cut out, then hooked in to the Stockton control board. It will be a haywire rig, with no safety interlocks, so use enough watch technicians to be able to catch trouble before it happens.

"If this scheme works, we can move control of the Sacramento Sector right out from under Van's feet, and he can stay in this Sacramento control office until he gets hungry enough to be reasonable."

He cut off and turned to the Subsector Engineer of the Watch. "Edmunds, give me a helmet - and a pistol."

"Yes, sir." He opened a drawer, and handed his chief a slender, deadly looking weapon. Gaines belted it on, and accepted a helmet, into which he crammed his head, leaving the anti-noise ear flaps up. Blekinsop cleared his throat.

"May - uh - may I have one of those helmets?" he inquired.

"What?" Gaines focused his attention. "Oh - You won't need one, Mr. Blekinsop. I want you to remain right here until you hear from me."

"But-" The Australian statesman started to speak, thought better of it, and subsided.

From the doorway the Cadet Engineer of the Watch demanded the Chief Engineer's attention. "Mr. Gaines, there is a technician out here who insists on seeing you - a man named Harvey."

"Can't do it."

"He's from the Sacramento Sector, sir."

"Oh! Send him in."

Harvey quickly advised Gaines of what he had seen and heard at the guild meeting that afternoon. "I got disgusted and left while they were still jawin', Chief. I didn't think any more about it until twenty stopped rolling. Then I heard that the trouble was in Sacramento Sector, and decided to look you up."

"How long has this been building up?"

"Quite some time, I guess. You know how it is - there are a few soreheads everywhere and a lot of them are functionalists. But you can't refuse to work with a man just because he holds different political views. It's a free country."

"You should have come to me before, Harvey." Harvey looked stubborn. Gaines studied his face. "No, I guess you are right. It's my business to keep tab on your mates, not yours. As you say, it's a free country. Anything else?"

"Well - now that it has come to this, I thought maybe I

could help you pick out the ringleaders."

"Thanks. You stick with me. We're going 'down inside' and try to clear up this mess."

The office door opened suddenly, and a technician and a cadet appeared, lugging a burden between them. They deposited it on the floor, and waited.

It was a young man, quite evidently dead. The front of his dungaree jacket was soggy with blood. Gaines looked at the watch officer. "Who is he?"

Edmunds broke his stare and answered, "Cadet Hughes-he's the messenger I sent to Sacramento when communication failed. When he didn't report, I sent Marston and Cadet Jenkins after him."

Gaines muttered something to himself, and turned away. "Come along, Harvey."

The cadets waiting below had changed in mood. Gaines noted that

the boyish intentness for excitement had been replaced by something uglier. 'There was much exchange of hand signals and several appeared to be checking the loading of their pistols.

He sized them up, then signaled to the cadet leader. There was a short interchange of signals. The cadet saluted, turned to his men, gesticulated - briefly, and brought his arm down smartly. They filed upstairs and into an empty standby room, Gaines following.

Once inside, and the noise shut out, he addressed them,

"You saw Hughes brought in-how many of you want a chance to kill the louse that did it?"

Three of the cadets reacted almost at once, breaking ranks and striding forward. Gaines looked at them coldly. "Very well. You three turn in your weapons, and return to your quarters. Any of the rest of you that think this is a matter of private revenge, or, a hunting party, may join them." He permitted a short silence to endure before continuing. "Sacramento Sector has been seized by unauthorized persons. We are going to retake it - if possible, without loss of life on either side, and, if possible, without stopping the roads. The plan is to take over 'down inside', rotor by rotor, and cross-connect through Stockton, The task assignment of this group is to proceed north 'down inside', locating and overpowering all persons in your path. You will bear in mind the probability that most of the persons you will arrest are completely innocent. Consequently, you will favor the use of sleep gas bombs, and will shoot to kill only as a last resort.

"Cadet Captain, assign your men in squads of ten each, with a squad leader. Each squad is to form a skirmish line across 'down inside', mounted on tumblebugs, and will proceed north at fifteen miles per hour. Leave an interval of one hundred yards between successive waves of skirmishers. Whenever a man is sighted, the entire leading wave will converge on him, arrest him, and deliver him to a transport car and then fall in as the last wave. You will assign the transports that delivered you here to receive prisoners. Instruct the drivers to keep abreast of the second wave.

"You will assign an attack group to recapture subsector control offices, but no office is to be attacked until its subsector has been cross-connected with Stockton. Arrange liaison accordingly.

"Any questions?" He let his eyes run over the faces of the young men. When no one spoke up, he turned back to the cadet in charge.

"Very well, sir. Carry out your orders!"

By the time the dispositions bad been completed, the follow-up crew of technicians had arrived, and Gaines had given the engineer in charge his instructions. The cadets "stood to horse" alongside their poised tumblebugs. The Cadet Captain looked expectantly at Gaines. He nodded, the cadet brought his arm down smartly, and the first wave mounted and moved out.

Gaines and Harvey mounted tumblebugs, and kept abreast of the Cadet Captain, some twenty-five yards behind the leading wave. It had been a long time since the Chief Engineer had ridden one of these silly-looking little vehicles, and he felt awkward. A tumblebug does not give a man dignity, since it is about the size and shape of a kitchen stool, gyro-stabilized on a single wheel. But it is perfectly adapted to patrolling the maze of machinery 'down inside', since it can go through an opening the width of a man's shoulders, is easily controlled, and will stand patiently upright, waiting, should its rider dismount.

The little reconnaissance car followed Gaines at a short interval, weaving in and out among the rotors, while the television and audio communicator inside continued as Gaines' link to his other manifold responsibilities.

The first two hundred yards of the Sacramento Sector passed without incident, then one of the skirmishers sighted a tumblebug parked by a rotor. The technician it served was checking the gauges at the rotor's base, and did not see them approach. He was unarmed and made no resistance, but seemed surprised and indignant, as well as very bewildered.

The little command group dropped back and permitted the new leading wave to overtake them.

Three miles farther along the score stood thirty-seven men arrested, none killed. Two of the cadets had received minor wounds, and had been directed to retire. Only four of the prisoners had been armed, one of these Harvey had been able to identify definitely as a ringleader. Harvey expressed a desire to attempt to parley with the outlaws, if any occasion arose. Gaines agreed tentatively. He knew of Harvey's long and honorable record as a labor leader, and was willing to try anything that offered a hope of success with a minimum of violence.

Shortly thereafter the first wave flushed another technician. He was on the far side of a rotor; they were almost on him before he was, seen. He did not attempt to resist, although he was armed, and the incident would not have been worth recording, had he not been talking into a hush-a-phone which he had plugged into the telephone jack at the base of the rotor.

Gaines reached the group as the capture was being effected. He snatched at the soft rubber mask of the phone, jerking it away from the man's mouth so violently that he could feel the bone-conduction receiver grate between the man's teeth. The prisoner spat out a piece of broken tooth and glared, but ignored attempts to question him.

Swift as Gaines had been, it was highly probable that they had lost the advantage of surprise. It was necessary to assume that the prisoner had succeeded in reporting the attack going on beneath the ways. Word was passed down the line to proceed with increased caution.

Gaines' pessimism was justified shortly. Riding toward them appeared a group of men, as yet several hundred feet away. There were at least a score, but their exact strength could not be determined, as they took advantage of the rotors for cover as they advanced. Harvey looked at Gaines, who nodded, and signaled the Cadet Captain to halt his forces.

Harvey went on ahead, unarmed, his hands held high above his head, and steering by balancing the weight of his body. The outlaw party checked its speed uncertainly, and finally stopped. Harvey approached within a couple of rods of them and stopped likewise. One of them, apparently the leader, spoke to him in sign language, to which he replied.

They were too far away and the yellow light too uncertain to follow the discussion. It continued for several minutes, then ensued a pause. The leader seemed uncertain what to do. One of his party rolled forward, returned his pistol to its holster, and conversed with the leader. The leader shook his head at the man's violent gestures.

The man renewed his argument, but met the same negative response. With a final disgusted wave of his hands, he desisted, drew his pistol, and shot at Harvey. Harvey grabbed at his middle and leaned forward. The man shot again; Harvey jerked, and slid to the ground.

The Cadet Captain beat Gaines to the draw. The killer looked up

as the bullet bit him. He looked as if he were puzzled by some strange occurrence-being too freshly dead to be aware of it.

The cadets came in shooting. Although the first wave was outnumbered better than two to one, they were helped by the comparative demoralization of the enemy. The odds were nearly even after the first ragged volley. Less than thirty seconds after the first treacherous shot all of the insurgent party were dead, wounded, or under arrest. Gaines' losses were two dead (including the murder of Harvey) and two wounded.

Gaines modified his tactics to suit the changed conditions. Now that secrecy was gone, speed and striding power were of first importance. The second wave was directed to close in practically to the heels of the first. The third wave was brought up to within twenty-five yards of the second. These three waves were to ignore unarmed men, leaving them to be picked up by the fourth wave, but they were directed to shoot on sight any person carrying arms.

Gaines cautioned them to shoot to wound, rather than to kill, but he realized that his admonishment was almost impossible to obey. There would be killing. Well, he had not wanted it, but he felt that he had no choice. Any armed outlaw was a potential killer - he could not, in fairness to his own men, lay too many restrictions on them.

When the arrangements for the new marching order were completed, he signed the Cadet Captain to go ahead, and the first and second waves started off together at the top speed of which the tumblebugs were capable - not quite eighteen miles per hour. Gaines followed them.

He swerved to avoid Harvey's body, glancing involuntarily down as he did so. The face was an ugly jaundiced yellow under the sodium arc, but it was set in a death mask of rugged beauty in which the strong fibre of the dead man's character was evident. Seeing this, Gaines did not regret so much his order to shoot, but the deep sense of loss of personal honor lay more heavily on him than before.

They passed several technicians during the next few minutes, but had no occasion to shoot. Gaines was beginning to feel somewhat hopeful of a reasonably bloodless victory, when he noticed a change in the pervading throb of machinery which penetrated even through the heavy anti-noise pads of his helmet. He lifted an ear pad in time to

hear the end of a rumbling diminuendo as the rotors and rollers slowed to rest.

The road was stopped.

He shouted, "Halt your men!" to the Cadet Captain. His words echoed hollowly in the unreal silence.

The top of the reconnaissance car swung up as he turned and hurried to it. "Chief!" the cadet within called out, "relay station calling you."

The girl in the visor screen gave way to Davidson as soon as she recognized Gaines' face. "Chief," Davidson said at once, "Van Kleeck's calling you."

"Who stopped the road?"

"He did."

"Any other major change in the situation?"

"No-the road was practically empty when he stopped it."

"Good. Give me Van Kleeck."

The chief conspirator's face was livid with uncurbed anger when he identified Gaines. He burst into speech. "So! You thought I was fooling, eh? What do you think now, Mister Chief Engineer Gaines?"

Gaines fought down an impulse to tell him exactly what

he thought, particularly about Van Kleeck. Everything about the short man's manner affected him like a squeaking slate pencil.

But he could not afford the luxury of speaking his mind. He strove to get just the proper tone into his voice which would soothe the other man's vanity. "I've got to admit that you've won this trick, Van - the roadway is stopped - but don't think I didn't take you seriously. I've watched your work too long to underrate you. I know you mean what you say."

Van Kleeck was pleased by the tribute, but tried not to show it. "Then why don't you get smart, and give up?" he demanded belligerently. "You can't win."

"Maybe not, Van, but you know I've got to try. Besides," he went

on, "why can't I win? You said yourself that I could call on the whole United States Army."

Van Kleeck grinned triumphantly. "You see that?" He held up a pear-shaped electric push button, attached to a long cord. "If I push that, it will blow a path right straight across the ways-blow it to Kingdom Come. And just for good measure I'll take an ax, and wreck this control station before I leave."

Gaines wished wholeheartedly that he knew more about psychiatry. Well - he'd just have to do his best, and trust to horse sense to give him the right answers. "That's pretty drastic, Van, but I don't see how we can give up."

"No? You'd better have another think. If you force me to blow up the road, how about all the people that will be blown up along with it?"

Gaines thought furiously. He did not doubt that Van Kleeck would carry out his threat; his very phraseology, the childish petulance of "If you force me to do this-" betrayed the dangerous irrationality of his mental processes. And such an explosion anywhere in the thickly populated Sacramento Sector would be likely to wreck one, or more, apartment houses, and would be certain to kill shopkeepers on the included segment of strip twenty, as well as chance bystanders. Van was absolutely right; he dare not risk the lives of bystanders who were not aware of the issue and had not consented to the hazard - even if the road never rolled again.

For that matter, he did not relish chancing major damage to the road itself-but it was the danger to innocent life that left him helpless.

A tune ran through his head-"Hear them hum; watch them run. Oh, our work is never done-" What to do? What to do? "While you ride; while you glide; we are-"

This wasn't getting anyplace.

He turned back to the screen. "Look, Van, you don't want to blow up the road unless you have to, I'm sure. Neither do I. Suppose I come up to your headquarters, and we talk this thing over. Two reasonable men ought to be able to make a settlement."

Van Kleeck was suspicious. "Is this some sort of a trick?"

"How can it be? I'll come alone, and unarmed, just as fast as my

car can get there."

"How about your men?"

"They will sit where they are until I'm back. You can put out observers to make sure of it."

Van Kleeck stalled for a moment, caught between the fear of a trap, and the pleasure of having his erstwhile superior come to him to sue for terms. At last he grudgingly consented.

Gaines left his instructions and told Davidson what he intended to do. "If I'm not back within an hour, you're on your own, Dave."

"Be careful, Chief."

"I will."

He evicted the cadet driver from the reconnaissance car and ran it down the ramp into the causeway, then headed north and gave it the gun. Now he would have a chance to collect his thoughts, even at two hundred miles per hour. Suppose he pulled off this trick-there would still have to be some changes made. Two lessons stood out like sore thumbs: First, the strips must be cross-connected with safety interlocks so that adjacent strips would slow down, or stop, if a strip's speed became dangerously different from those adjacent. No repetition of what happened on twenty!

But that was elementary, a mere mechanical detail. The real failure had been in men, Well, the psychological classification tests must be improved to insure that the roads employed only conscientious, reliable men. But hell's bells - that was just exactly what the present classification tests were supposed to insure beyond question. To the best of his knowledge there had never been a failure from the improved Hunim-Wadsworth-Burton method - not until today in the Sacramento Sector. How had Van Kleeck gotten one whole sector of temperament - classified men to revolt?

It didn't make sense.

Personnel did not behave erratically without a reason. One man might be unpredictable, but in large numbers, they were as dependable as machines, or figures. They could be measured, examined, classified. His inner eye automatically pictured the personnel office, with its rows of filing cabinets, its clerks - He'd got it! He'd got it! Van Kleeck, as Chief Deputy, was ex officio personnel

officer for the entire road!

It was the only solution that covered all the facts. The personnel officer alone had the perfect opportunity to pick out all the bad apples and concentrate them in one barrel. Gaines was convinced beyond any reasonable doubt that there had been skullduggery, perhaps for years, with the temperament classification tests, and that Van Kleeck had deliberately transferred the kind of men he needed to one sector, after falsifying their records.

And that taught another lesson-tighter tests for officers, and no officer to be trusted with classification and assignment without close supervision and inspection. Even he, Gaines, should be watched in that respect. Qui custodiet ipsos custodes? Who will guard those selfsame guardians? Latin might be obsolete, but those old Romans weren't dummies.

He at last knew wherein he had failed, and he derived

melancholy pleasure from the knowledge. Supervision and inspection, check and re-check, was the answer. It would be cumbersome and inefficient, but it seemed that adequate safeguards always involved some loss of efficiency.

He should not have entrusted so much authority to Van Kleeck without knowing more about him. He still should know more about him- He touched the emergency-stop button, and brought the car to a dizzying halt. "Relay station! See if you can raise my office."

Dolores' face looked out from the screen. "You're still there-good!" he told her. "I was afraid you'd gone home."

"I came back, Mr. Gaines."

"Good girl. Get me Van Kleeck's personal file jacket. I want to see his classification record."

She was back with it in exceptionally short order and read from it the symbols and percentages. He nodded repeatedly as the data checked his hunches - masked introvert-inferiority complex. It checked.

"'Comment of the Board:'" she read, "'In spite of the potential instability shown by maxima A, and D on the consolidated profile curve, the Board is convinced that this officer is, nevertheless, fitted for duty. He has an exceptionally fine record, and is especially adept

in handling men. He is therefore recommended for retention and promotion."

"That's all, Dolores. Thanks."

"Yes, Mr. Gaines!"

"I'm off for a showdown. Keep your fingers crossed."

"But Mr. Gaines-" Back in Fresno, Dolores stared wide-eyed at an empty screen.

"Take me to Mr. Van Kleeck!"

The man addressed took his gun out of Gaines' ribs - reluctantly, Gaines thought - and indicated that the Chief Engineer should precede him up the stairs. Gaines climbed out of the car, and complied.

Van Kleeck had set himself up in the sector control room proper, rather than the administrative office. With him were half a dozen men, all armed.

"Good evening, Director Van Kleeck." The little man swelled visibly at Gaines' acknowledgment of his assumed rank.

"We don't go in much around here for titles," he said, with ostentatious casualness. "Just call me Van. Sit down, Gaines."

Gaines did so. It was necessary to get those other men out. He looked at them with an expression of bored amusement. "Can't you handle one unarmed man by yourself, Van? Or don't the functionalists trust each other?"

Van Kleeck's face showed his annoyance, but Gaines' smile was undaunted. Finally the smaller man picked up a pistol from his desk, and motioned toward the door. "Get out, you guys!"

"But Van-"

"Get out, I said!"

When they were alone, Van Kleeck picked up the electric push button which Gaines had seen in the visor screen, and pointed his pistol at his former chief. "O.K.," he growled, "try any funny stuff, and off it goes! What's your proposition?"

Gaines' irritating smile grew broader. Van Kleeck scowled. "What's

so damn funny?" he said.

Gaines granted him an answer. "You are, Van - honest, this is rich. You start a functionalist revolution, and the only function you can think of to perform is to blow up the road that justifies your title. Tell me," he went on, "what is it you are so scared of?"

"I am not afraid!"

"Not afraid? You? Sifting there, ready to commit hara-kari with that toy push button, and you tell me that you aren't afraid. If your buddies knew how near you are to throwing away what they've fought for, they'd shoot you in a second. You're afraid of them, too, aren't you?"

Van Kleek thrust the push button away from him, and stood up; "I am not afraid!" he screamed, and came around the desk toward Gaines.

Gaines sat where he was, and laughed. "But you are! You're afraid of me, this minute. You're afraid I'll have you on the carpet for the way you do your job. You're afraid the cadets won't salute you. You're afraid they are laughing behind your back. You're afraid of using the wrong fork at dinner. You're afraid people are looking at you - and you are afraid that they won't notice you."

"I am not!" he protested. "You - You dirty, stuck-up snob! Just because you went to a high-hat school you think you're better than anybody." He choked, and became incoherent, fighting to keep back tears of rage. "You, and your nasty little cadets-"

Gaines eyed him cautiously. The weakness in the man's character was evident now - he wondered why he had not seen it before. He recalled how ungracious Van Kleeck had been one time when he had offered to help him with an intricate piece of figuring.

The problem now was to play on his weakness, to keep him so preoccupied that he would not remember the peril-laden push button. He must be caused to center the venom of his twisted outlook on Gaines, to the exclusion of every other thought.

But he must not goad him too carelessly, or a shot from across the room might put an end to Gaines, and to any chance of avoiding a bloody, wasteful struggle for control of the road.

Gaines chuckled. "Van," he said, "you are a pathetic little shrimp.

That was a dead give-away. I understand you perfectly; you're a third-rater, Van, and all your life you've been afraid that someone would see through you, and send you back to the foot of the class. Director - phiu! If you are the best the functionalists can offer, we can afford to ignore them - they'll fold up from their own rotten inefficiency." He swung around in his chair, deliberately turning his back on Van Kleeck and his gun.

Van Kleeck advanced on his tormentor, halted a few feet away, and shouted: "You - I'll show you. - I'll put a bullet in you; that's what I'll do!"

Gaines swung back around, got up, and walked steadily toward him. "Put that popgun down before you hurt yourself."

Van Kleeck retreated a step. "Don't you come near me!" he screamed. "Don't you come near me - or I'll shoot you - see if I don't!"

This is it, thought Gaines, and dived.

The pistol went off alongside his ear. Well, that one didn't get him. They were on the floor. Van Kleeck was hard to hold, for a little man. Where was the gun? There! He had it. He broke away.

Van Kleeck did not get up. He lay sprawled on the floor, tears streaming out of his closed eyes, blubbering like a frustrated child.

Gaines looked at him with something like compassion in his eyes, and hit him carefully behind the ear with the butt of the pistol. He walked over to the door, and listened for a moment, then locked it cautiously.

The cord from the push button led to the control board. He examined the hookup, and disconnected it carefully. That done, he turned to the televisor at the control desk, and called Fresno.

"Okay, Dave," he said, "Let 'em attack now - and for the love of Pete, hurry!" Then he cleared the screen, not wishing his watch officer to see how he was shaking.

Back in Fresno the next morning Gaines paced around the Main Control Room with a fair degree of contentment in his heart. The roads were rolling - before long they would be up to speed again. It had been a long night. Every engineer, every available cadet, had

been needed to, make the inch-by-inch inspection of Sacramento Sector which he had required. Then they had to cross-connect around two wrecked subsector control boards. But the roads were rolling - he could feel their rhythm up through the floor.

He stopped beside a haggard, stubbly-bearded man. "Why don't you go home, Dave?" be asked. "McPherson can carry on from here."

"How about yourself, Chief? You don't look like a June bride."

"Oh, I'll catch a nap in my office after a bit. I called my wife, and told her I couldn't make it. She's coming down here to meet me."

"Was she sore?"

"Not very. You know how women are." He turned back to the instrument board, and watched the clicking 'busy-bodies' assembling the data from six sectors. San Diego Circle, Angeles Sector, Bakersfield Sector, Fresno Sector, Stockton-Stockton? Stockton! Good grief! - Blekinsop! He had left a cabinet minister of Australia cooling his heels in the Stockton office all night long!

He started for the door, while calling over his shoulder, "Dave, will you order a car for me? Make it a fast one!" He was across the hail, and had his head inside his private office before Davidson could acknowledge the order.

"Dolores!"

"Yes, Mr. Gaines."

"Call my wife, and tell her I had to go to Stockton. If she's already left home, just have her wait here. And Dolores-"

"Yes, Mr. Gaines?"

"Calm her down."

She bit her lip, but her face was impassive. "Yes, Mr. Gaines."

"That's a good girl." He was out and started down the stairway. When he reached road level, the sight of the rolling strips warmed him inside and made him feel almost cheerful.

He strode briskly away toward a door marked ACCESS DOWN, whistling softly to himself. He opened the door, and the rumbling, roaring rhythm from 'down inside' seemed to pick up the tune even as

it drowned out the sound of his whistling.

"Hie! Hie! Hee!

The rotor men are we-

Check off your sectors loud and strong! One! Two! Three!

Anywhere you go

You are bound to know

That your roadways are rolling along!"